

# ... a great beginning ...

## Fort McMurray & Syncrude

An exciting supplement illustrating the dynamic growth of Fort McMurray, marked by the Official Opening of the Syncrude Oil Sands Project.

Edmonton Journal

## Ceremonies mark the official opening of Syncrude

### A Canadian project

More than 600 invited guests, including about 90 representatives from the newsmedia across Canada and the United States, attended the official opening of the massive Syncrude complex at Fort McMurray on Friday.

Premier Peter Lougheed pushed a ceremonial button to mark the official flow of oil which is expected to be more than one billion barrels over the next quarter century. The ceremonies took place at the Mildred Lake plant site, 450 kilometres northeast of Edmonton.

The oil sands plant, itself, represents an investment of almost \$2.2 billion. An additional \$270 million has been invested by Alberta Energy Company Ltd. and Calgary Power Ltd. to build the associated steam and electric power generation plant and Alberta Energy spent another \$78.5 million in building the 450 kilometre pipeline which delivers the plant production to major pipeline systems at Edmonton.

Premier Lougheed made the keynote address at the opening which was attended by representatives of the six owners of the industry-government Syncrude consortium.

Federal Energy Minister Alastair Gillespie represented the government of Canada which holds 15 per cent equity interest in the plant through Petro-Canada.

Alberta Energy Minister

Don Getty represented the province of Alberta, which through Alberta Syncrude Equity, holds a 10 per cent interest in the plant.

Ontario Energy Minister James Auld represented the province of Ontario, which through Ontario Energy Corp., holds a five per cent interest in the project.

J. A. Armstrong, president, chief executive and chairman of the board of Imperial Oil Limited, represented Imperial, which through Esso Resources Limited, holds 31.25 per cent interest in the project.

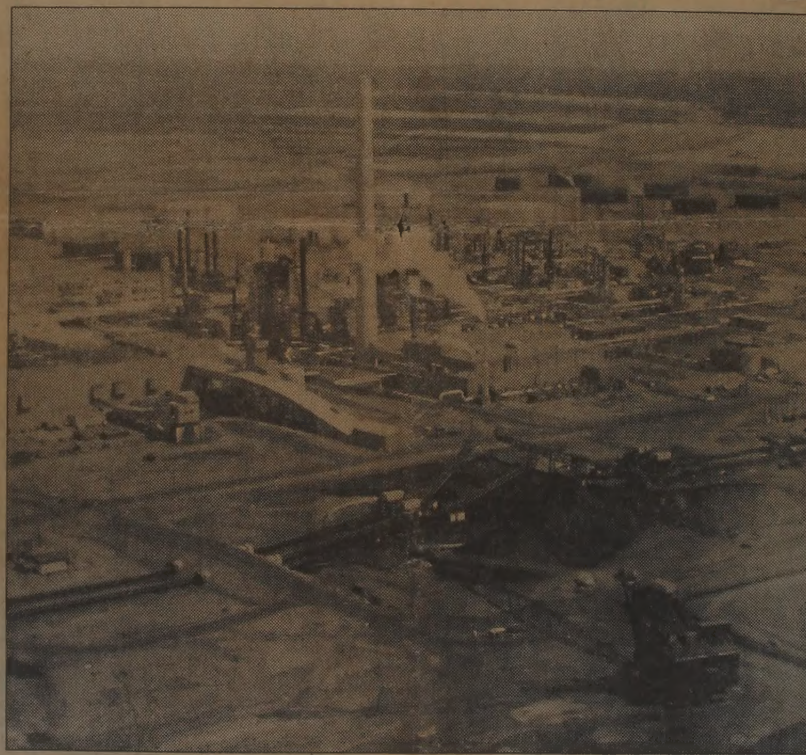
Canada-Cities Service Ltd., with a 22 per cent share of Syncrude was represented by R. V. Sellers, president of Cities-Service Company, Tulsa, Oklahoma.

C. D. Shepard, chairman of the board and chief executive officer of Gulf Canada Limited represented his company's 16.75 per cent interest in the project.

Canadians are involved in the Syncrude Project through the participation of the governments of Canada, Alberta and Ontario.

Each government will receive its share of the crude oil produced in proportion to its investment. There are many other benefits to Canadians as well.

Of the more than \$2 billion spent on construction over 80 per cent was spent in Canada on materials, payrolls, equipment, and engineering and consulting services.



The \$2.2-billion Syncrude plant, largest oil-sands production facility in the world, was officially opened Friday. A dragline is seen sitting in the oil-sands mine in the foreground. The emission stack is 600 feet high, taller than the Washington Monument.

new jobs throughout Canada with considerable benefit to the federal income.

The Syncrude Project created a major opportunity for Canadian engineers, consultants, researchers and others in related industries to gain expertise and experience in brand new technologies related to the tar sands. The know-how remains in Canada for use in future tar sands developments.

The Alberta Energy Company has an option, to acquire an equity in the project of from five to 20 per cent. Loans from the Alberta government to Canada-Cities Service and to Gulf Oil Canada Limited of \$100 million each are in the form of debentures convertible to equity. Should all these options be exercised, the Province of Alberta and the Alberta Energy Company will own 38 per cent of the project.

Under the terms of the original agreement, Alberta also receives 50 per cent of deemed net profit in lieu of conventional royalties. This is calculated by deducting the cost of production from the value of the oil produced. As an alternative, the province has the right to change to a straight royalty of 7½ per cent of the actual synthetic crude oil produced by the plant or the equivalent value.

#### A vital link in Canada's energy chain

In 1966, reserves of 489 million barrels of conventional oil were discovered in Canada. In 1976, discoveries dropped to 7.8 million barrels.

With oil reserves decreasing and consumption increasing at the rate of five per cent per year, it is obvious that present proven Canadian reserves of less than eight billion barrels of conventional oil are not going to last forever. Alternative sources of energy must be developed.

Among these are nuclear, solar, wind and tidal power, and new technology to broaden the uses of coal. Each of these has great potential for contributing to Canada's energy supply but it is not likely that they will be fully utilized before the end of this century.

The one alternative where technology is proven and the supply is sufficient to provide Canada with energy for many years to come lies in the heavy oil deposits of Alberta. These exist in four locations: Cold Lake, Peace River, Wabasca and Athabasca. Cold Lake holds an estimated 165 billion barrels of bitumen, Peace River 75 billion barrels; Wabasca, 86 billion barrels; and the Athabasca Oil Sands, 672 billion barrels, according to the Alberta Energy Resources

Conservation Board.

The Cold Lake, Peace River and Wabasca deposits are buried under overburden too deep for surface mining. Their potential can only be realized through "in situ" processes which will separate the oil from the sand in place so it can be pumped to the surface. Extensive research and development is being conducted in this technique and production facilities are being planned.

Only the Athabasca Oil Sands, and only a small percentage of those, are shallow enough to permit production by mining. It is estimated that, using present mining methods, about 26.5 billion barrels of oil can be recovered from this deposit. Improved mining methods could bring this figure up to over 80 billion barrels. In situ development could result in the addition of another 200 billion barrels. Together, these shallow and deep deposits give Canada one of the world's largest single known oil deposits.

Syncrude's contribution of 129,000 barrels of synthetic crude oil per day will provide only about five per cent of the country's energy demand in the mid-1980s. To fill the gap which Canada will face by then, additional tar sands plants will be needed, along with development of all alternative forms of energy supply.

#### People working with people

With over 3,000 people required to make the company function successfully, the activities within Syncrude range from the operation of the giant mining dragline to the cataloguing of technical journals, from data processing to mobile equipment maintenance, and from audio-visual training programs to environmental monitoring.

To mould this extensive number and variety of individuals into a successful operation is a challenge to every member of the company. To meet the challenge, working teams are being developed at all levels. Within the teams, members have increased influence on the planning and decisions which affect their jobs and the way they are accomplished. Management is committed to hear and act on team suggestions and concerns.

This team concept of operation is designed to provide direct communication among team members, supervisors and management and is the most positive approach to running an organization, ensuring that employees feel their personal goals are compatible with the goals of the company.

## Alberta oil sands saga long and complicated

Alberta's vast oil sand resource has inspired many dreams, and much discussion but only grudgingly produced any oil.

The fur trader and explorer, Peter Pond, first reported the heavy oil outcroppings along the Athabasca River, in 1778. He discovered the local Indians used the thick black oil, which oozed out of the riverbank, for waterproofing their canoes.

His reports predated the age of oil by almost a century and it was not until 1882 that Robert Bell was sent into the region and he discovered that oil sand or tar sand, a mixture of heavy oil, clay and sand, was visible for 118 miles along the Athabasca River bank.

The federal government, which turned the oil sand resource along with other minerals over to Alberta in 1930, conducted technical surveys of the deposit in

1913 and by 1919 the newly formed Alberta Research Council got into the act.

The heavy oil, or bitumen, was used in paving Edmonton streets in 1915 and later, in 1929, the federal government attempted road paving experiments in Edmonton with oil sand bitumen and some private companies attempted to make a go of oil sands productions.

Dr. Karl A. Clark, of the Alberta Research Council, put 40 years of research into the oil sands and developed the first major breakthrough — the hot water separation process.

The Second World War, and more specifically the Japanese attack on Pearl Harbor, threatened oil supplies on the West Coast. One answer — at a time still six years before Alberta's great Leduc oil discovery — was the oil sands and a committee was established to study

the concept. After the war the threat to oil supplies diminished and the oil sands were ignored again.

In an effort to reactivate oil sands development, the Alberta Research Council established a 500 ton per day extraction plant at Bitumont, north of Fort Mackay, in the late 1940's.

The Leduc oil discoveries diminished, for a time, the interest in oil sands and it was not until the mid-1950s that private industry again attempted to exploit this resource.

It was in this period that the two current majors in the oil sands: Great Canadian Oil Sands (GCOS) and Syncrude Canada began to take shape.

GCOS was established by Sun Oil Company in 1953, but Sun first developed an interest in the resource in 1944. But 1954, Sun of the Athabasca River, about 20

miles north of Fort McMurray.

GCOS applied, through the Oil and Gas Conservation Board, for approval to build a plant in 1960.

The Syncrude venture, meanwhile, was getting into gear through a company known as Cities Service Athabasca Inc. and eventually included Royalties, which became part of Gulf Oil Canada Ltd., Cities Service, Atlantic-Richfield and Imperial Oil Limited.

The four companies established a major research and testing program, which included a 1,000-barrel-a-day pilot plant at Mildred Lake, the current site of Syncrude, in 1959 and operated it through 1964.

This group also applied to the Alberta government for permission to build a commercial plant. Their scheme for a 100,000-barrel-a-day project, estimated to cost

\$32.5 million, was heard by the Oil and Gas Conservation Board, along with the GCOS application, in 1962.

The future of oil sands development was determined when the board rejected the Cities Service application and granted the pioneer venture to GCOS.

The Alberta government wanted to closely regulate oil sands development in order to prevent this resource from displacing conventional oil markets. The Cities Service group were told to defer their venture until 1968 and GCOS received government approval, in 1964, to build at 45,000-barrel-a-day project.

GCOS had invested \$2.35 million and had its plant operation by May, 1968 when the Cities Service group once again sought approval for their venture.

In the meantime the group had been renamed Syncrude Canada Ltd. and its basic re-

search laboratory and pilot operation had been transferred to Edmonton. Imperial, Atlantic Richfield and Canada-Cities Service had each had a 30 per cent share and Gulf Oil had a 10 per cent interest.

The group appeared before the Oil and Gas Conservation Board with plans to bring an 80,000-barrel-a-day plant into production by 1973. But the board, aware of the major oil discoveries in Alaska and pressured by independent Alberta oil producers, deferred the project and the Alberta government eventually agreed that development could proceed provided the production did not begin by July 1, 1976.

Syncrude's partners then decided their venture would have to be larger to be economic and reapplied to expand synthetic crude production to 125,000 barrels daily.



# Spragins, the Syncrude persuader

Frank Spragins, a Mississippi-born electrical engineer, has been synonymous with the syncrude project throughout the years.

Sitting near the back of a reception room in the Chateau Lacombe one September evening five years ago, he watched calmly as Premier Peter Lougheed announced the oil sands complex would be going ahead.

The expression on his face, when not smiling for a passing camera man, showed the fatigue of many years of struggle. He had been working to develop the billion-dollar oil sands complex for almost two decades.

His voice, which retains the southern twang which comes with being born in Mississippi and educated in Texas, was calm as he stood to field questions from his staff after the historic announcement.

During the previous eight years, he had been called upon many times to use all his persuasive powers.

He had the tedious task of convincing the Alberta government that a major oil sands plant would not take

away markets from Alberta's conventional oil wells and he fought hard to persuade the federal government to allow Syncrude desirable income tax concessions for its mining venture.

Perhaps his toughest battle came with Premier Lougheed over the development terms for the Syncrude complex.

"Both sides had their objectives and fought hard to obtain them," Mr. Spragins remarked at the time. More than once these negotiations, which had to turn to a computer at times for quick answers, ruptured to the point that the entire project was threatened.

In the end, the agreement was satisfactory to both sides, and the project received the green light in September, 1973.

Mr. Spragins stayed to guide the Syncrude organization through the difficult years of construction and experienced the frustration of seeing his life's work almost become worthless when a partner pulled out of Syncrude after cost escalations and the project almost foundered.

The project, however, was saved by the timely participation of three govern-

## A bright future

In view of our country's future energy needs, we owe it to ourselves to develop the Athabasca Tar Sands as quickly as possible. A magnificent new resource, almost unlimited in its scope, the tar sands offer a known source of petroleum which could in time make Canada energy self-sufficient, a self-sufficiency which is vital to maintaining our standard of living.

"Every barrel of oil produced by a tar sands plant will be one barrel of oil that Canada will not have to buy on the international market. For about the expenditure we would make annually to an external supplier, we would be able to build a plant to produce oil at the same price, provide thousands of jobs for Canadians and bolster our entire economy."

"Best of all, that plant will remain to produce oil for years into the future, guaranteeing energy and jobs for generations to come. It would be ironic if the national economy should founder for lack of an expanding Canadian energy base when the solution to our problem is so near at hand."

"Today, we need companies with foresight, governments with determination and a public with understanding. The keyword for all is 'action'."

F. K. Spragins,  
President,  
Syncrude Canada Ltd.  
1964-1975.

ments early in 1975 and later Mr. Spragins was promoted to chairman of the consortium.

tium and H.B. Scott took over as Syncrude's president.

Mr. Spragins, approaching his 65th birthday retired from Syncrude in December, 1977. He retains his home in Edmonton where he is active as an oil sands consultant and a member of the Alberta Oil Sands Technology and Research Authority (AOSTA).

Like many oilmen, Frank Spragins came to the Alberta oil industry from south of the border.

But he arrived long before most of the others had even heard of Alberta's potential, and he stayed to become not only a Canadian citizen, but a very involved and very dedicated Albertan.

Frank Spragins had been saddled with the job of launching the Syncrude project since he became president of the new consortium in January, 1965.

Even at that time, he had devoted 11 years of his life to oil sands research with Imperial Oil Ltd. in Alberta.

Mr. Spragins was born 59 years ago in Natchez, Miss., and raised in Texas. He graduated from Rice University, Houston, with a degree in electrical engineering in 1938. After graduation, he joined the Carter Oil Company, a subsidiary of Standard Oil of New Jersey. He was with Carter Oil until the United States entered the Second World War.

His bid to enter the services was altered when the War Office decided he would be of more use to his country

looking for oil than fighting.

He arrived in Alberta in 1942 and spent the next three summers looking for oil in southern Alberta with Standard of New Jersey's Canadian affiliate, Imperial Oil. During this period, he was a member of the geophysical team involved in selecting what was to be the Leduc discovery field.

After going through the lean years of oil exploration during the war and the prosperous times after Leduc, Mr. Spragins was introduced to the Athabasca oil sands.

By 1959 he was appointed manager of Imperial Oil's Athabasca Tar Sands department and assigned to work with Cities Service and Richfield in researching oil sands extraction methods.

After an unsuccessful attempt to obtain an oil sands development approval from the old Alberta Oil and Gas Conservation Board, the companies reduced their interest in the oil sands for a couple of years and then in 1965 established a new vehicle, Syncrude Canada Ltd., to develop an oil sands mining property on a lease held by Cities Service north of Fort McMurray.



Frank Spragins

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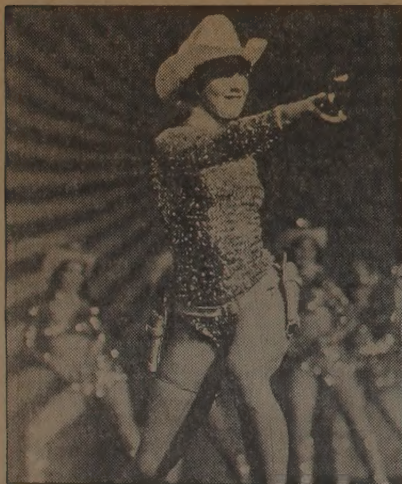
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Electrically controlled conveyor belts stretching nearly nine miles bring the oil sands from the pit to the new Syncrude refinery.



The Young Canadians from Calgary formed part of the spectacular entertainment at the official opening ceremonies of the Syncrude complex on Friday.

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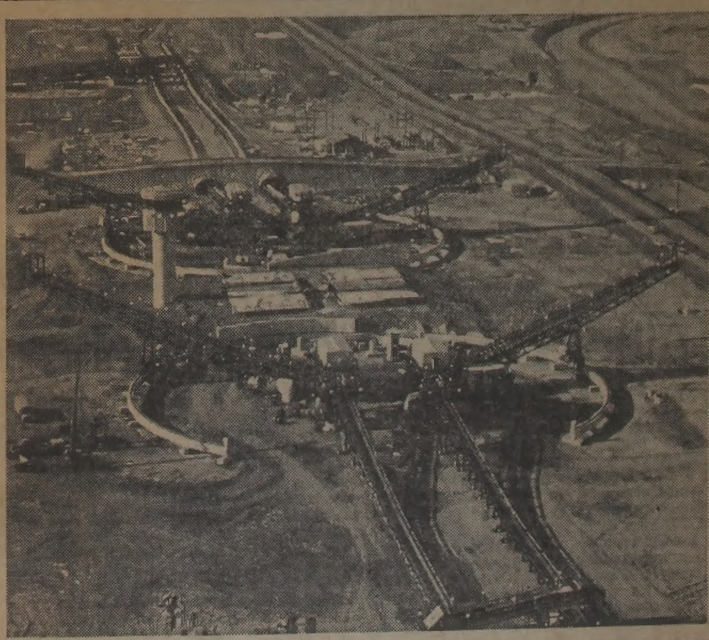
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Fort McMurray's business district serves a permanent population of over 26,000.



High rise apartment buildings are now beginning to dominate the downtown skyline.

## Fort McMurray — growing with the oil sands

The site of present day Fort McMurray was the location of a succession of trading posts.

The first was Peter Pond's "Fort of the Forks", established in 1778. The last, constructed in 1870 by "Trader" Moberly as a steamboat terminus for the Hudson's Bay Company, was named Fort McMurray.

In the early days, the economy of the community was based on the fur trade, lumbering and fishing. Major deposits of salt near the townsite supported a flourishing industry for a number of years. The first attempts at tar sand development made their contributions, as well.

In 1926, the railway, with dreams of a growing timber industry, reached the Clearwater River at a point three-and-a-half miles upstream and a new community, called Waterways, began its development as the terminus for barging supplies to the Arctic. The two settlements, separated by an area known

as The Prairie, reached a combined population of 971 in 1941. This was increased immensely, but temporarily, when the region became the staging area for shipments of thousands of tons of materials required for the U.S. Army's project to build a 500-mile-long oil pipeline from Norman Wells to a refinery at Whitehorse.

The year 1964 marked the beginning of the modern era of expansion for Fort McMurray. Great Canadian Oil Sands began construction and another surge in population started as GCOS employees and their families took up permanent residence. The Prairie disappeared and the two communities became one as the space between filled with stores, houses and commercial establishments. The population rose to about 8,000 by 1967 when GCOS started production.

In 1974 construction of the Syncrude Project began and shortly thereafter the first of more than 2,500 plant

workers and their families established homes in Fort McMurray. These additions would in time bring the population to an estimated 26,000 people.

The rapid growth of the community resulted in greater demands on facilities and services within the town. Housing extended beyond the original townsite and new subdivisions containing thousands of homes were built around the older community. To meet the additional requirements, new schools were established, hospital facilities were enlarged, additional recreational complexes made their appearance, new commercial outlets opened and existing stores and services expanded.

A most important asset of Fort McMurray is the youth and enthusiasm of its residents. Mostly from urban centres, they are making the most of a unique opportunity to contribute to the development of their community. They make their voices heard in municipal affairs; their opinions help mould the educational system, and they create cultural and recreational organizations to develop and direct activities in arts, sports, handicrafts and entertainment.

Fort McMurray is a growing, young city whose people take pride in the fact that they are personally contributing to the initial development of Canada's most important single energy source.

### Returning nature to nature

An undertaking the size of the Syncrude Project cannot avoid disturbing the boreal forest environment during the construction and operation but careful advanced planning and a watchful eye while work is in progress can minimize that disturbance.

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The project was designed with protection of the environment in mind; the lasting effects of the Syncrude operation on the Athabasca Oil Sands region are expected to be minimal.

Because of the implications of the huge surface mining operation, Syncrude began studies in 1971 to gain an understanding of the ecology of the area. These provide a base for the preparation of impact assessments and the design of operation procedures. The results of the company's environmental research are publicly available in monographs which are distributed to libraries throughout the country.

A three-phase Environmental Impact Assessment is required by Alberta Environment. The first phase was a predictive document which brought together the engineering specifications and environmental knowledge that had been gathered to 1973. The second and third phases describe the effects of construction and plant operation.

The effects of the project on air, water and land are continually and carefully monitored. For example, emissions to the atmosphere are through a 180 metre (600 foot) tall stack. This is designed to limit ground-level

concentrations of sulphur dioxide to an environmentally safe level, as dictated by Alberta's stringent air pollution regulations. Detailed mathematical studies predict the behavior of the stack's plume under each of the atmospheric conditions which occur over the region and, in addition, five remote stations spotted around the plant continually monitor the air and send back information to a central station.

A reclamation plan has been devised for the mine pit, which will be refilled with overburden and processed sand. Stored muskeg and other organic material will be added to this to provide a base for revegetation.

Reclamation will begin as soon as the mining has progressed far enough for work to start in the centre section of the mine site. Research on the best approach to reclaiming the site was initiated by Syncrude in 1973. Reclamation will progress as mining progresses so that, when mining is completed, the environment of the area will be returned without delay to a productive self-supporting state.

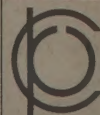
By the completion of construction, over \$12 million had been invested in environmental protection programs, in addition to \$285 million spent on pollution control equipment in the plant.

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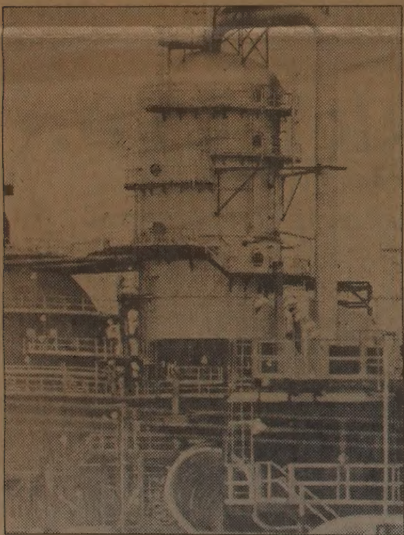
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Average height of the refinery towers at the new Syncrude plant is ten storeys.

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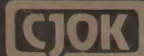
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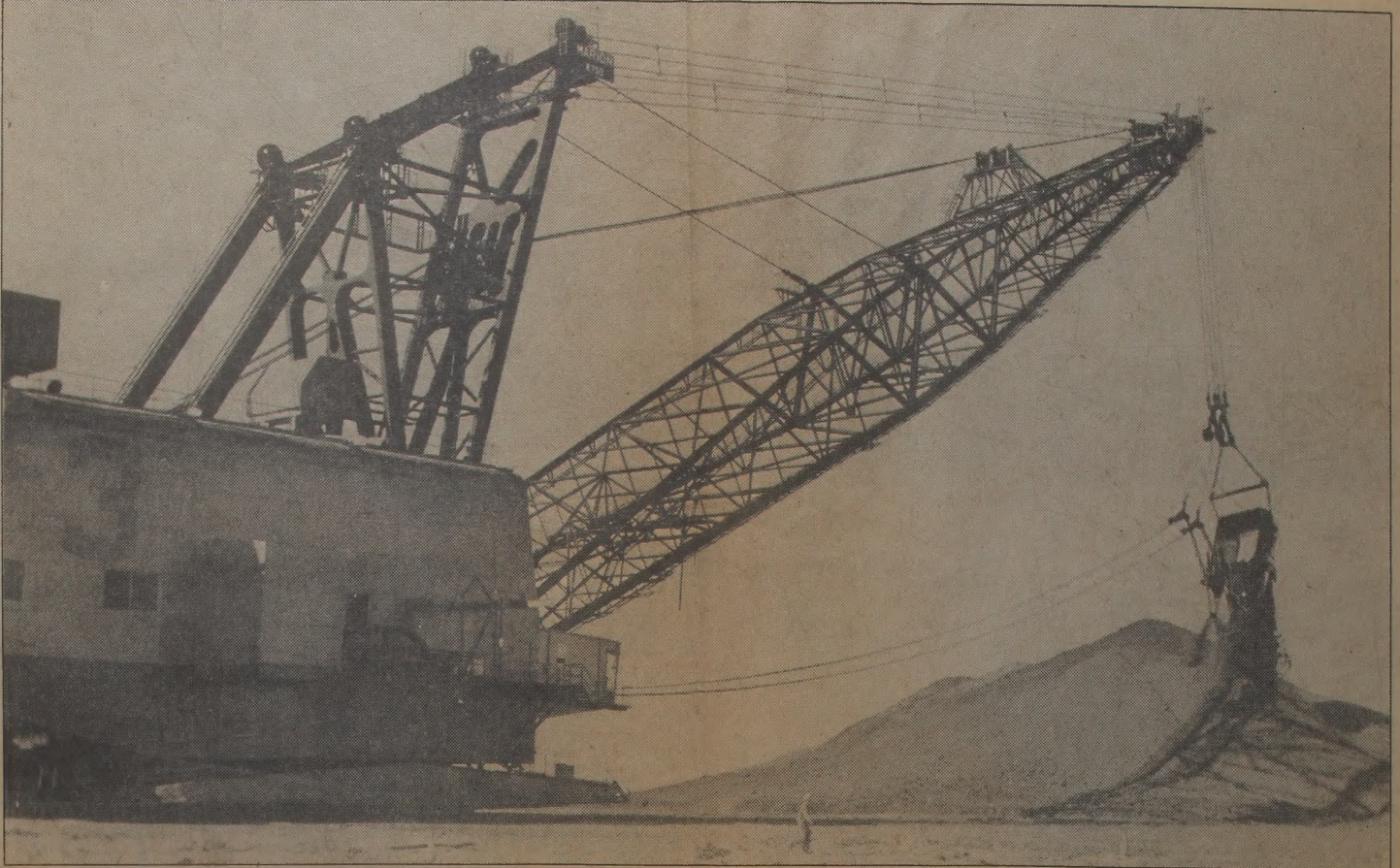


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Syncrude's mammoth dragline (there are four of them) weighs 6,120 tonnes (6,750 tons), with a boom 110 metres (360-feet) and is equipped with a bucket capable of holding 61 cubic metres (80 cubic yards) of material.

## First oil flows

The first barrels of synthetic crude oil to be produced at the \$2.2-billion Syncrude oil-sands plant near Fort McMurray in northeastern Alberta arrived in Edmonton at the end of August.

Murray Blakely, a Syncrude Canada Ltd. spokesman, said the plant started initial production by the end of the third week in August and the oil was piped to Ed-

monton about a week after that.

Syncrude had delayed its start-up several times due to problems in the utilities and bitumen-treatment facilities but the problems were resolved, he said.

The Syncrude consortium, owned jointly by three private companies and the federal, Alberta and Ontario governments, has already stockpiled 1.1 million barrels

of bitumen ready to enter the upgrading plant to be cracked into synthetic oil. Syncrude's designed capacity of 129,000 barrels a day will be reached by 1982. Blakely said the plant is scheduled to produce 100,000 barrels a day by the end of this year.

### Plans Expansion

At about the same time of the Syncrude start-up, Great

Canadian Oil Sands Ltd. GCOS is to decide whether it will undertake an expansion project to increase its production capacity by one-third to 60,000 barrels a day. GCOS has already spent more than \$1 million studying the proposed expansion and has become increasingly concerned about estimates rising to \$240 million from \$146 million.

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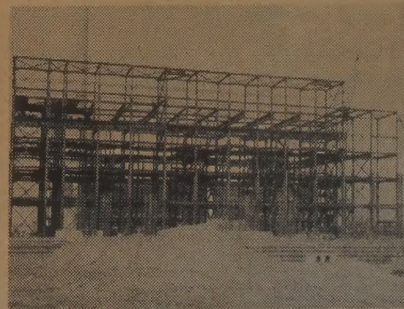
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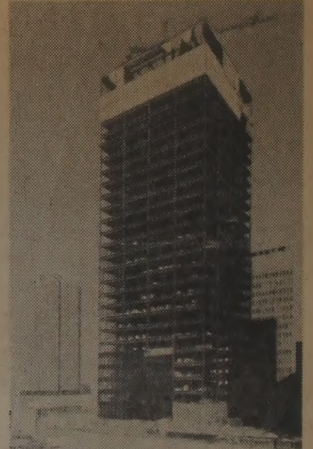
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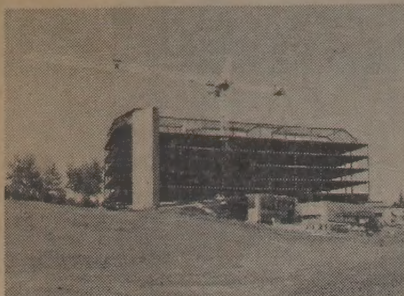
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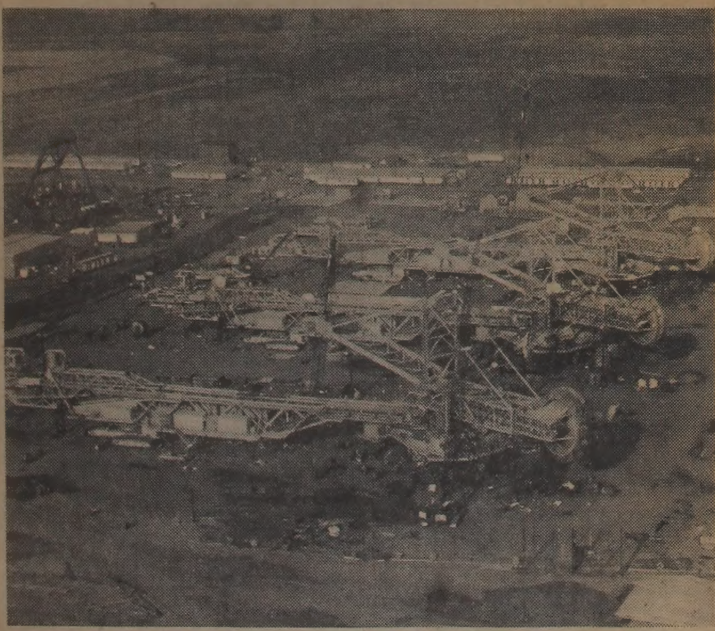
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draglines and the bucketwheels,  
and to those who designed all of that complex  
materials handling operation. It will move  
250 thousand tons of oil sand a day.*

*Thanks to the team who built that 600 foot stack  
and to the guy that climbed it to put the flag on top.*

*Thanks to the riggers who set the reactor towers,  
to the crews who connected those mazes of pipe,  
to those who put the power plant together  
and delivered power.*

*Thanks to the men and women who  
conceived and produced the Edmonton Field  
Operations. Your pre-assembly worked.*

*Thanks to the safety teams, the fire crews,  
the doctors and nurses and first aiders.*

*Thanks to the editors, contributors and  
photographers on the Jobsite Newsletter;  
to the phys. ed. instructors and the coaches.  
There were 14 teams in the intra-mural league  
at Mildred Lake.*

*Thanks to Native Outreach  
and the Canada Employment and Immigration Commission,  
to those thousands of workers who came from near and  
far and to those they left behind.*

*Thanks to the various government agencies  
for their cooperation and assistance.*

*Thanks to MHG and AESL, to Underwood McLellan,  
Monenco, EBA Engineering, R. M. Hardy & Associates,  
Simons McBean and other engineering contractors whose  
expertise is much appreciated. Thanks to a multitude of  
construction contractors and suppliers of materials and  
services — Loram, Poole, Cana, Evergreen, Cessco,  
Acklands, Century Sales, GWS Krupp, Hartog Steel, Tar  
Sands Machine, Grimshaw Trucking, Premay Equipment  
Hauling, R. L. Brews, Dominion Bridge, Safety Supply,  
among others. Thanks to PWA, their pilots and cabin crews.*

*Thanks to Fort McMurray, the town chairman and  
council, the library, the school boards, the Mounties.  
Thanks to the bus drivers on the run from the  
airport and the cabbies on those cold, late nights.*

*Thanks to TODAY... and CJOK.  
Thanks to Keyano College.*

*Thanks also to cooperation and hard work,  
to know-how and congeniality,  
to patience and a sense of humour.*

*Thanks to Syncrude Canada, a great client.*

*Thanks to all who contributed to a job well done.*

*Thank you.*

*Sincerely,*



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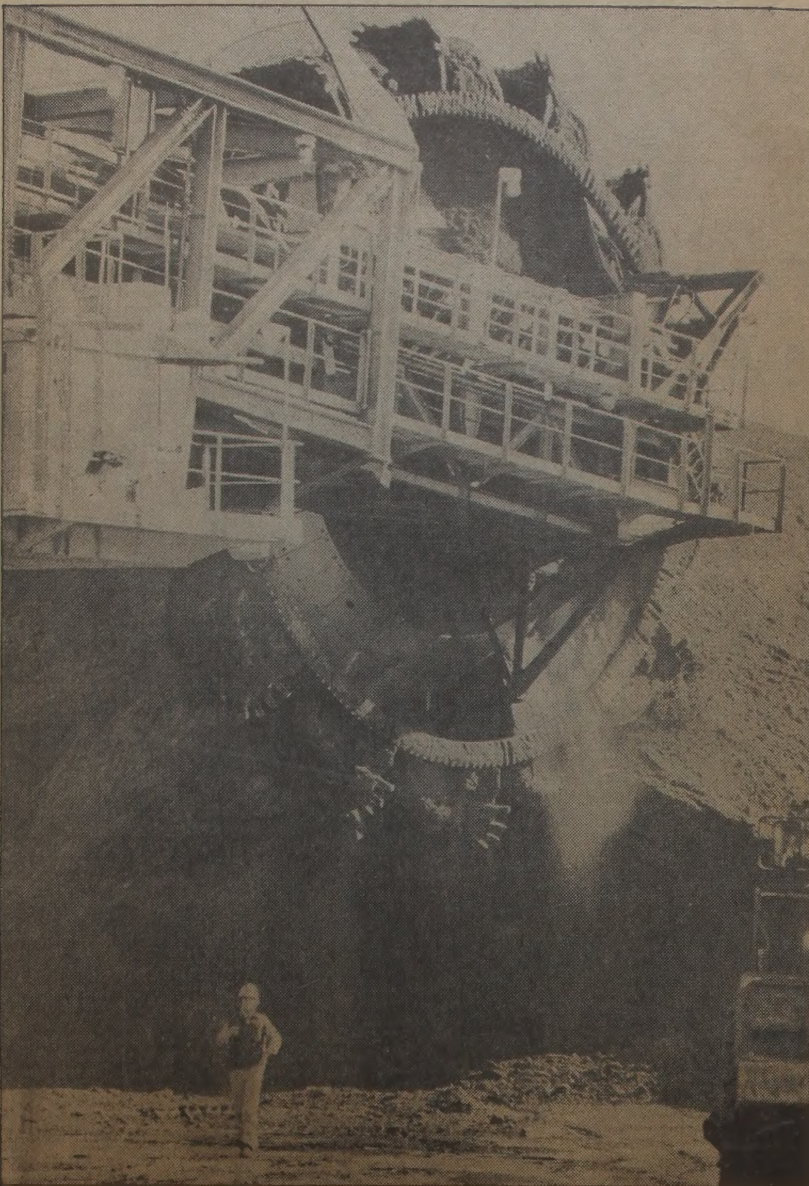


PHOTO BY STEVE MAKRIIS

Bucketwheel reclaimers, machines equipped with a series of toothed buckets on a revolving wheel, move the material from the windrows formed by the draglines at the Syncrude site onto the conveyor belts. The reclaimers are 20 metres (65 feet) high and over 120 metres (400 feet) long.

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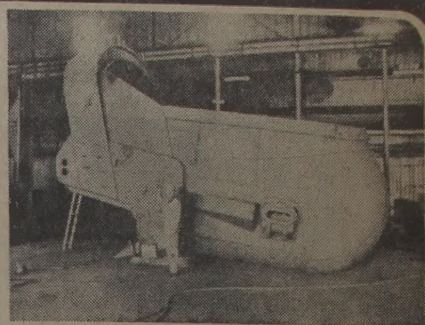
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# Syncrude tapped experience



Brent Scott

The president of Syncrude Canada Ltd. has more than 25 years experience with major oil industry construction projects in Canada.

Mr. Scott became president of Syncrude in 1975 and Frank Spragins, the man who guided Syncrude through its early years of formation was promoted to chairman of the board of the oil sands consortium.

H.B. (Brent) Scott, who had been executive vice-president of Syncrude since 1972, was appointed president of the oil sands consortium in June. Prior to joining Syncrude he had directed construction of the largest oil refinery built in western Canada prior to 1970 and the massive east coast Point Tupper, Nova Scotia refinery and associated deep-water terminal.

In fact, the 50-year-old engineer went through a major expansion of the now defunct B-A (British American Oil Company) refinery at Moose Jaw in the early 1950s when that was considered "a massive project".

Mr. Scott was appointed Syncrude president after the six oil company and government partners in the project decided to strengthen its senior executive. Frank Spragins, who as president guided Syncrude from its conception in the 1960s, became chairman.

Both men are still very much involved in the development of the \$2 billion plant, but more of Mr. Spragins' attention is directed to long-term policy development and meetings with the various partners while Mr.

Scott handles the day-to-day operations.

Mr. Scott, a native of Calgary, attended the University of Alberta in Edmonton from 1943-47 and graduated as a civil engineer.

"I joined British American Oil in Calgary in 1947 and I was particularly pleased with this job opportunity because it allowed me to live near home," he said.

Six months later, B-A (which later changed its name to Gulf Oil Canada Ltd.) transferred Mr. Scott to Moose Jaw, Sask., and he stayed there for the next six years.

The young engineering graduate started work as a mechanical engineer at the B-A Moose Jaw refinery and was eventually promoted to maintenance superintendent. "When I went there the re-

finery was rated at a 7,000-barrel-per-day operation, but by 1953 we had expanded it to 12,000 or 14,000 barrels daily and had a staff of 200," he said during an interview.

"I guess in its day that was a massive project for Western Canada's oil industry," he said and noted that the 125,000-barrel-per-day Syncrude plant currently has 3,400 construction workers on site at Mildred Lake. It will have a staff of more than 2,000 when the plant starts operating.

In 1954, he was transferred to Edmonton as operating superintendent of the

B-A Edmonton refinery and spent the next five years in Edmonton. One of his three children were born here and the others were born in Moose Jaw.

His next move took him to B-A's Clarkson refinery, near Toronto, and in 1961 he became assistant manager of B-A's Calgary refinery. He returned to Clarkson in 1965 and a year later was made manager of B-A's engineering and refining department.

During the next six years his company was involved in two massive construction projects which increased its refining capacity by 50 per cent to 365,000 barrels daily

and made it the second largest oil refinery in Canada.

One of these was the 87,000-barrel-per-day Point Tupper, Nova Scotia refinery. The other involved a new oil industry concept which involved establishing a centralized refinery in Western Canada and shifting product to market by pipeline.

The result of this centralization was an 80,000-barrel-per-day refinery which when it opened in Edmonton, at a cost of \$84 million, in 1971 was the largest in Western Canada. (Imperial's Strathcona refinery, east of Edmonton, will be larger.)

## Early exploration

The first white man to see the Athabasca Tar Sands was fur trader Peter Pond, who was lured to the area in 1778 by tales of the rich fur harvests that were possible there.

He was followed a decade later by fellow Nor'wester Alexander Mackenzie, who wrote in his journal, "At about 24 miles from the fork (of the Athabasca and Clearwater rivers) are some bituminous fountains into which a pole of 20 feet long may be inserted without the least resistance. The bitumen is in a fluid state and when mixed with gum, the resinous substance collected from the spruce fir, serves to gum the Indians' canoes. In its heated state it emits a smell like that of sea coal."

Other explorers were equally fascinated by the tar sands, including mapmaker David Thompson and Arctic explorers Franklin, Richardson and Simpson.

But it wasn't until 1875 that the first government-sponsored geological study was initiated, carried out by Professor John Macoun. Robert Bell headed another government expedition into the area seven years later, followed by a third in 1889. That year the chronicler of the Laird Expedition noted, "That this region is stored with a substance of great economic value is beyond all doubt, and, when the hour of development comes, it will, I believe, prove to be one of the wonders of northern Canada."

These early adventurers' explorations familiarized Canadian officials with the tar sands and their potential, and caught the imagination of entrepreneurs from around the world. They set the stage for the development that was soon to follow.

### Initial Commercial Development

The first attempts to develop the Athabasca Tar Sands commercially were made under the illusion that the bitumen in the area must be coming from pools of oil deep beneath the surface. In an attempt to locate this

source, Alfred von Hammerstein drilled the first wells in the region, north of Fort McMurray. Altogether, between 1906 and 1917, about 24 wells were sunk in the search for the mother-lode of oil. None was successful.

In 1913, Sidney Ellis, a young engineer employed by the federal government's department of mines, began his work in the tar sands, which was to last until 1945. Ellis was an early advocate of the hot water flotation method of separating bitumen from sand, conducting a number of experiments to test his technique. He was the first to bring out samples from the area for laboratory testing. As a result, quantities of tar sand were shipped to Edmonton to be tested as road-paving material. While the paving was successful, tar sand could not compete economically with imported asphalt because of transportation difficulties; the project was dropped.

In the 1920s, an independent entrepreneur named R.C. Fitzsimmons, using the same hot water flotation process, produced bitumen for roofing and road surfacing at a plant near Bitumount, 50 miles north of Fort McMurray. By 1942, however, he had encountered financial difficulties and was forced to sell. The new owners, Oil Sands Limited, also ran into money problems and in 1948 the small plant was taken over by the Alberta Government, to investigate Alberta Research Council extraction methods with large scale equipment.

By 1949 the plant was processing 450 tonnes (500 tons) of tar sand a day, but it was decided to close the operation as the government was not interested in launching a commercial venture. Data from the experiments were used as the basis for a major study of the viability of commercial production.

The Alberta Research Council had been conducting research into methods of extracting oil from the tar

(Continued on Page C-8)

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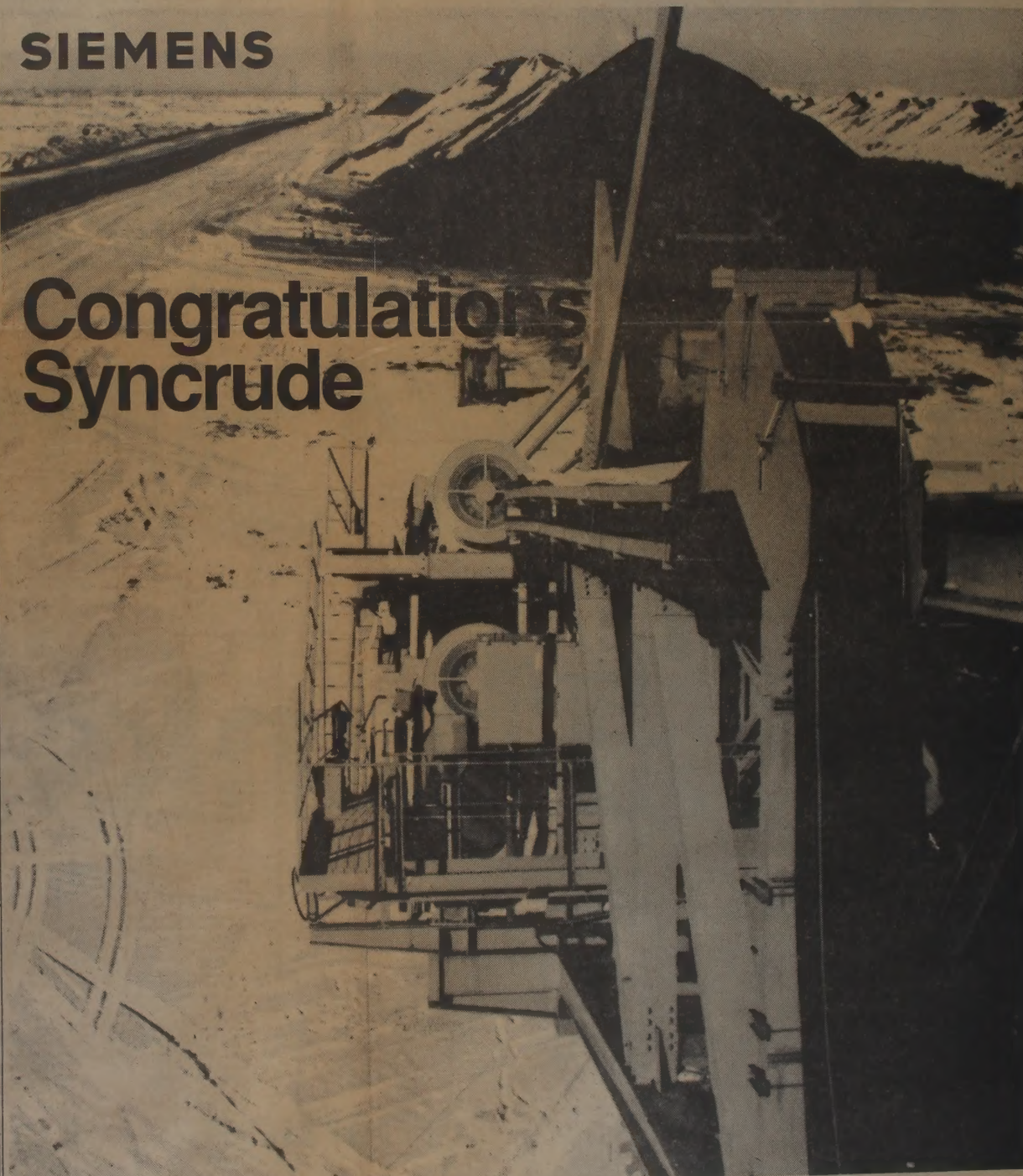
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# Syncrude story started in the early 1950s

In the mid-1950s, Royalite Oil Company Limited was conducting research work at the Bitumount plant.

In June of 1958, a 90 per cent interest in this project was purchased by Cities Service Co. and the Mildred Lake pilot plant was constructed with operations and research under the direction of Cities Services Athabasca, Inc.

The following year Richfield Oil Corporation (later

called Atlantic Richfield Canada Ltd.) acquired one third of the Cities Service interest in the project. Then Imperial Oil Limited joined the group. The working interest at that time was Royalite (now Gulf Oil Canada Limited), 10 per cent; and Imperial, Richfield and Cities Service each with 30 per cent.

In 1962 the four-company group applied to the Alberta Oil and Gas Conservation

Board for a license to produce 100,000 barrels of synthetic crude oil per day. The application was deferred five years and the activities of the organization remained confined to research and development.

On Dec. 18, 1964, Syncrude Canada Ltd. was incorporated and, on Jan. 1, 1965, assumed operation of the project in place of Cities Service Athabasca.

Another application,

presented in 1968, was rejected when the discovery of oil reserves in Prudhoe Bay created what appeared to be a surplus of conventional oil, leaving no potential market for the tar sand product. The following year, Syncrude was authorized to build an 80,000 barrel-per-day plant, provided it would not go on stream before July 1, 1976. Syncrude later sought to expand the plant size and in 1971, the Energy Resour-

ces Conservation Board recommended to the Alberta cabinet that a 125,000 barrel-a-day plant be authorized. Permission to proceed was given by Order-in-Council in 1972. Just before the plant was completed, the rated capacity was increased to 129,000 barrels per day.

In September, 1973, the government of Alberta and the participants in the Syncrude Project reached agreement on royalties. Clearing of the construction site commenced in December of that year with actual construction beginning the following spring.

In December, 1974, increased capital project costs, combined with other commitments, forced Atlantic Richfield Canada Ltd. to

withdraw from the joint venture. New financial support was found in February, 1975, when the governments of Canada, Alberta and Ontario purchased 15, 10 and five per cent of the project respectively, leaving Imperial Oil Limited with 31.25 per cent; Canada-Cities Service with 22 per cent and Gulf Oil Canada Limited with 16.75 per cent.

One of Canada's largest construction projects

Site preparation for the construction of the Syncrude Project was started with the clearing of the future sites of the extraction and upgrading facilities, the tailings pond and mine. The first of 3.8 million cubic metres (five million cubic yards) of muskeg were removed and

stockpiled. The area was then backfilled with sand and gravel to support the work crews, equipment and materials which began moving onto the site in the spring of 1974. Construction started with the foundations of the fluid cokers.

In the plans were a mine which would eventually

cover about 26 square kilometres (10 square miles); an extraction complex housed in a building averaging nine stories high, 151 metres (494 feet) by 64 metres (210 feet); a utility plant which can provide 260 megawatts of electrical

(Continued on Page C-9)

## Early explorations . . .

(Continued from Page C-7) sands since the 1920s. One of its scientists, Dr. Karl Clark, pioneered experiments with a hot water flotation process which involved mixing tar sand with hot water and aerating the resultant slurry. This would then separate into a floating froth of bitumen and a clean layer of sand which would settle to the bottom of the tank.

While many other techniques were tried to extract tar sands oil (including radiation, combustion, solven ex-

traction, and centrifuging) the hot water flotation method pioneered by Ells, Fitzsimmons and Clark proved, over the years, to be the most viable.

In 1936, another developer, Max Ball, founded Abasand Oils Ltd. His plant west of Fort McMurray was a limited success in that it produced diesel oil from the tar sands. There was a brief flurry of interest in his project, especially during World War II but, when the plant burned down after being purchased by the federal

government, the project died with the buildings.

The 1950s saw another upsurge of interest in the tar sands when the publication of an Alberta government report indicated that production of oil from the sand could be a profitable venture. One result was the establishment of a 1,000-barrel-a-day pilot plant at Mildred Lake by Cities Service Athabasca, Inc., the forerunner of Syncrude Canada.

The first major producer of oil from the tar sands, Great Canadian Oil Sands

Ltd., began plant construction in 1964 and started to produce oil in 1967. Permitted production capacity of the plant was 45,000 barrels of synthetic crude oil per day. This permit level was subsequently raised to 65,000 barrels per day. Even after starting production, the company had to overcome numerous technical and financial difficulties but present production has reached as high as 70,000 barrels of oil per day, with a sustained daily output in the range of 50,000 barrels.



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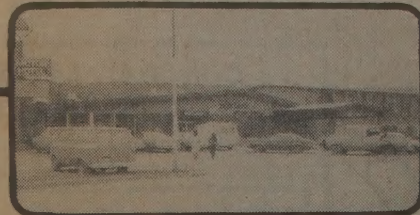
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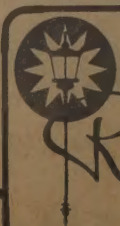
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# "Thanks."

Thanks to the 3000 men and women who operate the Syncrude project, Canada is closer to reducing its dependency on foreign sources of oil.

It's also thanks to the thousands of Canadians who researched and developed the new techniques that have been required to successfully extract oil from the tar sands; thanks to those who designed the new extraction equipment and facilities; and thanks to the people who worked

on the construction of the Syncrude complex near Fort McMurray.

Thanks to the efforts of all Syncrude people, past and present, other companies will be following the Syncrude example and helping build energy self-sufficiency into Canada's future.

To the thousands of dedicated Canadian men and women who have helped, and who are helping, make it possible, Syncrude says "Thanks".

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# Syncrude — important in Canada's economic history

(Continued from Page C-8)

power, 3,750,000 pounds per hour of steam, and water treatment facilities with a capacity of 61.3 kilolitres (13,500 gallons) a minute; as well as upgrading facilities, capable of producing 129,000 barrels of synthetic crude oil per day.

Product and intermediate tankage with a total volume of 4.6 million barrels had to be constructed, as did all the warehousing, storage, maintenance shops and administration buildings required to support the production process.

A work force of over 7,500 swarmed over the site during the peak construction periods in 1976 and 1977, 6,600 of whom lived in the construction camp on-site. This small town was equipped with a variety of recreational facilities and three kitchens which served up to 27,000 meals a day.

Completing the complex required an estimated five million engineering and 39 million construction man-hours, with another four million construction hours for the utility plant. Among the materials required were 248,000 cubic metres (325,000 cubic yards) of concrete; 853 kilometres (2.8 million linear feet) of piping and 2,920 kilometres (9.6 million linear feet) of wire and cable.

Two new bridges had to be built, one over the mighty Athabasca River and one over Poplar Creek, a small watercourse between Fort McMurray and the construction site. Each had to have a load capacity of 450 tonnes (500 tons) to handle the immense weight of the equipment being trucked to the project. It is estimated that nearly 450,000 tonnes (500,000 tons) of materials, equipment, vessels and plant components travelled the highway to the construction site.

Actual cost of the project was approximately \$2.16 billion, less than six percent above the 1974 estimate of \$2.048 billion, making it the second largest single construction projects in Canadian history.

**Mining the tar sands**  
Syncrude's first mining dragline, which made its initial cut on June 24, 1977, was joined by a second machine in August of that year. These mammoth machines, each weighing 6,120 tonnes (6,750 tons) with a boom 110 metres (360 feet) long and an operating radius of 104 metres (340 feet), are equipped with buckets capable of holding 61 cubic metres (80 cubic yards) of material. Four of the draglines together have the capacity to mine 83.7 million tonnes (93 million tons) of tar sand and waste material

per year, more than three times the amount of coal mined in Canada in 1977.

The draglines are used to both remove overburden which is returned to the pit and to mine the tar sand which is deposited in a windrow behind each machine. Bucketwheel reclaimers, machines equipped with a series of toothed buckets on a revolving wheel, then move the material from the windrow onto the conveyor system. Each dragline will have its own reclaimers, which has a height of 20 metres (65 feet) and is over 120 metres (400 feet) long.

A series of electrically-powered conveyor belts

moves the tar sand from the mine to the extraction plant. Each of the conveyor systems is designed to transport tar sand at the rate of 6,300 tonnes (7,000 tons) per hour. It is in the extraction plant that conversion to synthetic crude oil begins.

**Oil from the sand**  
In the extraction plant, the tar sand is fed into rotating tumblers where it is mixed with hot water and steam, resulting in a thick, aerated slurry. Each tumbler weighs 210 tonnes (233 tons) and is 30 metres (100 feet) long by 5.4 metres (18 feet) in diameter. The slurry is fed into primary separation vessels, each 18.6 metres (62

feet) in diameter, where the aerated bitumen separates into droplets and floats to the surface as a froth. The froth, at this point, still con-

tains substantial amounts of water and fine solids.

The froth recovered from the extraction plant is diluted with naphtha and cen-

trigued twice to remove the remaining water and solids. The naphtha is then separated out by distillation, leaving the very thick, black,

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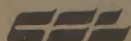
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Tenants at the Mackenzie Park include at this time Harbor Industries, Greenforest Builders, Alcor Holdings, R. Angus, Byers Transport, AGT and Northwestern Utilities.

The Keyano College heavy industrial campus adjoins the site.

Residential development opportunities are also available through Alberta Housing Corporation for projects of from one to 200 units.

In development process at this time are a \$10 million government centre, a hotel, several shopping centres including the 280,000 sq. ft. addition to the Peter Pond Shopping Centre (valued in the mid-\$4 million range), a new downtown campus for Keyano College, a \$40 million hospital and a number of large scale residential projects for both industry and the service sector.

Building permit value for the town for 1977 was \$72,017,426, and to date for 1978 is \$37,647,929.

## Alberta's New Oil Capital

# FORT McMURRAY

FORT McMURRAY WILL WELCOME YOUR DEVELOPMENT ENQUIRIES AND WOULD ENCOURAGE YOU TO INVESTIGATE THE POSSIBILITIES OF OIL SANDS PLANT OPERATIONAL SUPPORT SERVICES, SUB-CONTRACTING TO UPCOMING ADDITIONAL PLANT DEVELOPMENTS, AND SERVICE SECTOR REQUIREMENTS FOR A COMMUNITY OF 26,500. THE NORTHEAST ALBERTA REGIONAL PLAN PROJECTS A REGIONAL POPULATION SERVED BY THE FORT McMURRAY REGIONAL CENTRE OF 100,000 BY THE YEAR 2000.

### FOR LAND AVAILABILITY AND DEVELOPMENT REQUIREMENTS, CONTACT:

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